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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,426	09/13/2001	Shuichi Kanno	NIP-247	3908

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MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER

TRAN, HIEN THI

ART UNIT PAPER NUMBER

1764

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,426

Applicant(s)

KANNO ET AL.

Examiner

Hien Tran

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 14, 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 14, lines 3-4 it is unclear as to what structural limitation applicants are attempting to recite, how the PFC, HFC, SF₆ and NF₃ are related to the fluorine compounds; in lines 3 and 6 it is unclear as to what is intended by "charged upstream therein" or "charged downstream" and which one is charged upstream or downstream of the apparatus, the catalysts or the compounds; in line 4 "or" should be changed to --and--; in lines 10-11 it is unclear as to where the HF and CO come from, how they are related to the compounds set forth in line 5.

In claim 16, it is unclear as to whether the catalyst is the same as to the catalyst set forth in claim 14, lines 4-5, note that it is unclear as to where the CO comes from how it is related to the compounds set forth in claim 14, lines 4-5. See claim 17 likewise.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 14, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 08-238418 in view of EP 885,648 and JP 61-3040.

With respect to claim 14, JP 08-238418 discloses an apparatus for decomposition of fluorine compounds comprising: a reactor 2 having a catalyst 1 for decomposing fluorine compounds and a catalyst 7 for the decomposition of CO disposed downstream of the catalyst 1; a heater 4 for heating the catalysts; a moisture supplying unit for supplying moisture to the fluorine compounds; an oxygen supplying unit for adding oxygen; and an inert gas supplying unit for adding an inert gas as a diluent gas (see, for example, Figs. 1-2, abstract; sections 0017-0018, 0021).

Note that intended use is of no patentable moment in apparatus claims.

Art Unit: 1764

JP 08-238418 is silent as to whether fluorine compound decomposition catalyst 1 may be used to decompose at least one of PFC, HFC, SF₆ and NF₃, and the catalyst 7 may be used to decompose SO₂F₂ and N₂O.

However, it should be noted that the type of the intermediate by-product formed therein depends on the type of exhaust gas passing through the reactor. Although JP 08-238418 shows one example of the fluorine compounds, such as CFC (chlorofluorocarbon), which are decomposed into CO₂, CO, HF, HCl, JP 08-238418 further discloses that the apparatus is for decomposition of organic halogenated compounds containing a fluorine, chlorine, bromine.

EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including SF₆ or NF₃ gas. Such catalyst includes a combination of aluminum and nickel oxide.

It would have been obvious to one having ordinary skill in the art to utilize the apparatus of JP 08-238418 to treat other types of fluorine compounds, such as SF₆ or NF₃ as taught by EP 885,648, so as to optimize the availability of the apparatus for different types of fluorine compounds thereof.

JP 61-3040 discloses that the other type of fluorine compounds, such as SF₆ is decomposed into SO₂F₂.

JP 08-238418 further discloses the second catalyst 7 for decomposing the exhaust gas containing the intermediate by-product is the same as the catalyst of the instant claim. Therefore, the intermediate by-product of SO₂F₂, if there is any, is inherently decomposed and removed by the second catalyst of JP 08-238418.

With respect to claims 16-17, JP 08-238418 discloses that the catalyst for the decomposition of CO is noble metal (see, for example, sections 0021, 0037).

Art Unit: 1764

With respect to claim 18, JP 08-238418 further discloses a gas scrubbing tower 12 for removing components from a gas discharged from said reactor 2 by contacting said gas with alkaline aqueous solution (see, for example, abstract; Figs. 1-2).

With respect to claim 19, the apparatus of JP 08-238418 is substantially the same as that of the instant claims, but fails to disclose the specific type of the catalyst for decomposing said fluorine compounds as claimed.

However, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including SF_6 or NF_3 gas. Such catalyst includes a combination of aluminum and nickel oxide.

It would have been obvious to one having ordinary skill in the art to alternately select an appropriate catalyst for decomposing fluorine compounds, such as the combination catalyst of aluminum and nickel oxide, in the apparatus of JP 08-238418 since such type of catalyst would increase the decomposition rate for the fluorine compounds as taught by EP 885,648.

7. Claims 14, 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 885,648 in view of JP 08-238418 and JP 61-3040.

With respect to claims 14, 18, EP 885,648 discloses an apparatus for decomposition of fluorine compounds including SF_6 or NF_3 gas, said apparatus comprising: a reactor 8 having a catalyst 9 for decomposing fluorine compounds and a scrubber 11 for neutralizing a part of carbon oxides, nitrogen oxides and sulfur oxides disposed downstream of the catalyst 9; a heater 10 for heating the catalyst; a moisture supplying unit 4 for supplying moisture to the fluorine compounds; an oxygen supplying unit 3 for adding oxygen (see, for example, Fig. 9, pages 2-4).

Art Unit: 1764

The apparatus of EP 885,648 is substantially the same as that of the instant claims, but fails to disclose whether a second catalyst may be provided to decompose at least one of oxides of carbon, sulfur and nitrogen and fails to disclose provision of an inert gas supplying unit as claimed. EP 885,648 is also silent as to the type of by-products, such as SO_2F_2 and N_2O as claimed

However, the same teachings with respect to JP 08-238418 and JP 61-3040 apply.

It would have been obvious to one having ordinary skill in the art to provide an inert gas supplying unit in the apparatus of EP 885,648 so as to dilute the exhaust gas thereof as taught by JP 08-238418.

It would have been obvious to one having ordinary skill in the art to provide a second catalyst for decomposing at least one of oxides of carbon, sulfur and nitrogen in the apparatus of EP 885,648 for further removing the by-products generated in the decomposition process thereof as taught by JP 08-238418.

With respect to claims 16-17, the same teachings with respect to JP 08-238418 apply.

With respect to claim 19, EP 885,648 discloses provision of a catalyst for decomposing fluorine compounds including SF_6 or NF_3 gas. Such catalyst includes a combination of aluminum and nickel oxide.

Response to Arguments

8. Applicant's arguments with respect to claims 14, 16-19 have been considered but are moot in view of the new ground(s) of rejection.

Applicants argue that JP '418 does not disclose catalyst for decomposing a fluorine compounds, such as PFC, HFC, SF_6 or NF_3 as in the instant invention, e.g. does not disclose

Art Unit: 1764

compounds produced in the process. Such contention is not persuasive as the introduction of EP 885,648 overcomes such argument.

Applicants argue that EP 885,648 does not disclose that the fluorine compounds are decomposed into harmful components including any one of $\text{SO}_2\text{F}_2 + \text{N}_2\text{O}$, $\text{SO}_2\text{F}_2 + \text{CO}$, $\text{N}_2\text{O} + \text{CO}$, and $\text{SO}_2\text{F}_2 + \text{N}_2\text{O} + \text{CO}$. Such contention is not persuasive as although EP 885,648 is silent as to the specific intermediate by-products as set forth in the instant invention, EP 885,648 discloses provision of an exhaust gas containing the same fluorine compound as that of the instant claim passing through the decomposition catalyst containing aluminum and nickel oxide which is also the same as that of the instant claim, and therefore inherently producing the same intermediate by-product as that of the instant claim. In any event, JP 61-3040 is relied upon for teaching that one of intermediate by-products formed in the decomposition process of SF_6 is SO_2F_2 .

Furthermore, it should be noted that the compounds in the exhaust gas are not parts of the apparatus.

Applicants' request the acknowledgement of the claim for priority in the case. However, it is unclear as to what "priority" is implied, since there is only one PCT/JP99/03074 is listed in the declaration.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is (571) 272-1454. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

Art Unit: 1764

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1454. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hien Tran
Primary Examiner
Art Unit 1764

HT